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21.1.96

Dear Gian Carlo,

I have now had time to return to your letter of 6<sup>th</sup> December and would like to offer the following comments.

There are two crucially distinct readings of OM-LOC:

(1) There is the reading which prohibits measurement procedures on the left from affecting measurement outcomes on the right. This is a case by case version of the probabilistic parameter independence, P.I.

This is the reading which is actually used in the derivation of  
$$O.M. \wedge \text{Compl.} \wedge (OM-LOC) \supset \neg (ER-LOC) \times$$

P.T.O.

and hence the denial of OM-loc in this sense can indeed block the derivation of  $\neg(ER-loc)$  as we all agree.

(2) But there is a logically stronger sense that prohibits not only setting-to - result effects at space-like separation, but also result-to - result effects (i.e. a case by case version of O.I.)

Now it is crucial for the logical structure of your argument that you use the logically weakest version of OM-loc that is necessary for the result \* to hold.

If you use a stronger version than is necessary, you cannot infer that a failure of this stronger version will block the derivation of  $\neg(ER-loc)$ .

That is just a matter of straight logic.

Now in your discussion of the relation between OM-loc and B-loc, you are all



the time using <sup>II</sup> the stronger version  
of OM-loc, since in your examples  
you refer to the question of whether  
the outcomes of the two measurements  
influence one another.

Referring to my previous letter  
dated 5<sup>th</sup> November, I was always  
using the weak version of OM-loc,  
and for that version, I maintain  
that my discussion of the  
problematics ~~of~~ of deriving  
 $OM-loc \supset B-loc$   
was correct.

I would like now to deal with your  
Example 3, in which you claim that  
 $OM-loc \supset P.I.$ , requires a No Conspiracy  
assumption.

If Alice selects <sup>by some rule</sup>  $L$  when to toss, then she  
is inducing a place-selection on the  
random sequence generated by Bob. If  
this altered the limiting frequency of Bob's  
results, this would contradict the randomness  
p.v.

of Bob's sequence. But if Bob's sequence really is random, this could not happen!

If you agree with the points in this letter, then I suggest the best way forward would be as follows: I enclose a copy of a revised version of the paper with La Rivière, which I think summarizes my considered point of view on the vital question of a correct relativistic formulation of the EPR argument. I have been asked by Bob Cohen whether I would consider contributing this paper to the Shimony Festschrift he is editing. I would be happy to do this, and then you could raise additional points and comments in a further submission to Studies in History and Philosophy of Modern Physics.

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I would play no part in the editorial discussion of such a submission,



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but would leave this for Jeremy to sort out with you.

I have very much enjoyed, and benefited from, our discussions of this matter.

With very best wishes

Michael

P.S. I should add in relation to your discussion of why the violation of OM-Loe is less serious than the violation of ER-Loe from a relativistic point of view, that you again use the strong version of OM-Loe, when you talk, for example, of a "violation of OM-Loe -- due to a violation of O.I."

